Self-heating food packaging

Self-heating food packaging (SHFP) is active packaging with the ability to heat food contents without external heat sources or power. Packets typically use an exothermic chemical reaction. Packets can also be self-cooling. These packages are useful for military operations, during natural disasters, or whenever conventional cooking is not available. These packages are often used to prepare main courses such as meat dishes, which are more palatable when hot.

Self-heating field rations for up to 18 soldiers

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Chemistry

Commercial heat sources for self-heating food packaging use an exothermic (heat releasing) reaction, for which there are several common formulations. These include:

- Quicklime aka calcium oxide, and water. Quicklime, inexpensive and readily available, is generally recognized by the FDA as safe.[1] The product of the reaction is calcium hydroxide.
- Finely powdered magnesium metal alloyed with a small amount of iron, and table salt, actuated by adding water, as in an MRE flameless ration heater.

Some newer formulations use a Thermite-like reaction between a more reactive metal powder such as aluminum or magnesium, with a less reactive metal oxide such as iron oxide or silicon dioxide [2]

See also

- Active packaging
- Flameless ration heater
- Self-heating can

References

1. https://web.archive.org/web/20070812132324/http://www.fda.gov/ora/inspect_ref/itg/itg17.html
2. https://theconversation.com/self-heating-drinks-cans-return-heres-how-they-work-98476 Accessed June 2019

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